

## CAPACITY BUILDING WORKSHOP ON SATELLITE ACCOUNTS OF THE ENVIRONMENT

(LILONGWE, MALAWI 17 TO 19 DECEMBER 2018)

### **1. BACKGROUND AND JUSTIFICATION**

Malawi has embarked on a process of developing satellite environmental accounts that is in line with the sustainable development policy.

As part of this environmental assessment and providing a training on environment statistics, Malawi must benefit from technical assistance from the Economic Commission for Africa and the United Nations Environment Programme. The technical committee will benefit from the support of experts from both institutions in the framework of a capacity building workshop planned for the 17<sup>th</sup> December to 19<sup>th</sup> December 2018.

### **2. OBJECTIVES OF THE WORKSHOP**

The objective of this workshop is to build the capacity of Technical Committee members in the development of environmental satellite accounts.

The workshop will focus on the water, land, and forests accounts and the capacity building for these accounts started by presenting an overview on component 2 of the Framework for the Development of Environment Statistics. Specifically, the workshop will:

- Better equip the Technical Committee in the development of physical accounts (forests and timber resources, land management, water resources);
- better equip the Technical Committee in the preparation of environmental goods and services accounts;
- finalize the filling of the self-assessment tool for environmental statistics recommended by the Framework for the Development of Environment Statistics (FDES).

This workshop will also introduce the participants to data modeling and implementing the Statistical Data and Metadata eXchange (SDMX) for national data reporting and involve the neighboring countries share their skills and experience with SDMX.

### **3. EXPECTED RESULTS**

At the end of the workshop, the members of the technical committee will be better equipped to prepare the accounts. In the future, an inventory of the availability of environmental statistics will be made.

### **4. ORGANIZATIONAL MODALITIES**

The workshop is scheduled for a duration of three (03) days and will be held from Monday 17<sup>th</sup> to Wednesday 19<sup>th</sup> December 2018.

The distribution of participants will be determined after consultations with Malawi and the participating agencies and countries. It will target representatives from National Statistical Offices, Ministry of Environment, National Government Agencies and Technical Committees.

## I. Sessions and Activities conducted

### 1.1 Presentation of physical accounts of Water, Land and Forests

The presentation focused on environment resources and their uses, these resources include; Mineral, Energy, Land, Soil, Biological and Water.

This highlighted the need to evaluate economic value of environment resources which might be affected in developmental projects to compare the benefits of the resources and the planned projects. Focus on stocks of fisheries pointed out that the need to extend acquiring accounts or stocks for other wildlife because currently UNSD has statistics of fisheries which have clear/significant economic contribution but there are gaps on wildlife like endangered animals.

The Ministry of Energy and Mining, of which Environmental Affairs Department (EAD) is under, presented the exchanges on the development of the physical accounts of water resources, land and forests. This discussed the state of progress, difficulties encountered and the prospects. Key among the discussions was the need to establish information/data management systems to track and keep records on environment. It was recommended that it is necessary to collect more data through the involvement of communities at the initial planning stage before coming up with policies since in the absence of that, such programming hinder sustainability.

#### 1.1.1 Presentation of the physical account of water

The participants were tasked to prepare a water asset account using a stock and flow diagram which had different water entry and exiting systems. The exercise presented the following observations on the challenges faced:

In urban:

- i) Water quality
- ii) Water pollution

In rural:

- i) Water scarcity

In general:

- i) Intermittent water supply
- ii) Water use conflicts
- iii) Transboundary water data and conflicts

This session contributed to participants developing a consensus on the way forward on addressing the challenge faced in physical accounts of water. These include:

1. Constructing water harvesting structures.
2. Need to revamp the environment in order to support water retention.
3. Exploring and investing in ground water sources.
4. Monitor performance of artificial reserves.

Other suggestions on managing water quality included:

1. Consider water waste management (recycling).
2. Implement measures to prevent dumping of waste into water systems.
3. Consider quality assurance initiatives of water.

### 1.1.2 Presentation of the physical account of land

The objectives of this session were as follows:

1. To identify the link between statistics and geospatial data.
2. Understand the role of geospatial information and potential geospatial data sources for monitoring the 2030 Agenda.
3. Understand how land accounting can be used as a tool for turning geospatial data into information.
4. Be aware of the potential for using Earth Observation as an opportunity for improving land accounts.

The participants were able to participate in an exercise that concluded with the following:

1. Learnt that a map can be used to calculate the area of each type of ecosystem or feature in order to generate statistics
2. Using GIS, geo points can tell the situation at a particular location. Or Census or survey data can show location of households if household GIS coordinates are collected during field work.
3. Using GIS, geospatial data can be linked with population data to show the impact of population on environment.
4. Through earth observation (remote sensing) can show the changes in terms of measuring the environment over time and can ensure comparability across locations and time.

The session equally introduced participants to resources that can be used in physical accounting of land. These are:

1. Satellite images with moderate resolution, 250 m with focus on climate change as an Initiative of Land Cover map
2. High Resolution, Landsat, 30 m: Maps of water bodies from the Global Surface Water Explorer are also publicly available and UN Environment is collaborating with NASA on mapping wetlands at 30 m resolution.
3. Very High Resolution, 0.5 - 2 m: data is available for purchase. UN Environment with NASA is planning a pilot to test the benefits of this level of resolution.

## 1.2 Statistical Data and Metadata eXchange (SDMX)

SDMX is an international initiative that aims at standardizing and modernizing the mechanisms and processes for the exchange of statistical data and metadata among international organizations and member countries without necessarily filling in data request questionnaires.

The core functions of the SDMX include:

- To create more standards for exchange of statistical data and metadata.
- Aimed at bringing data at one level basing on the same concept with ease due to the embedded coding system.
- It's not software (standard) rather is a tool.
- Data is harmonized through a mapping function.
- SDMX improves the statistical processing of data collection.
- SDMX can be implemented in xml, gemes and csv formats.

## 1.3 Exchange on The Environment Statistics Self-Assessment Tool (ESSAT)

A self-assessment was previously done which was done by the Environmental Affairs Department as a lead institution where a few institutions were involved. ESSAT forms were filled by the institutions that were available to a workshop which took place in August, 2017 but to date we don't know the state of affairs of that assessment.

It was observed that the first assessment failed because Some sectors were not represented in the assessment, hence it's hard to identify our stocks in terms of available data as well as identifying data gaps. There is a need to redo the assessment by the participants in this workshop since we are privileged to have a bigger representation as opposed to the first assessment. There in an equal need to involve other countries and learn how they have managed their environment statistics in terms of establishing The Framework for the Development of Environment Statistics (FDES).

This session further highlighted the following focus areas:

- Structure of ESSAT
- Mandate and organization of national statistics
- Mandate and organization of environment statistics
- Production of environment statistics
- Uses of environment statistics
- Institutions and collaboration for the production of environment statistics
- Existing and required resources
- International and regional network
- Technical assistance and training

- The way forward in environment statistics

## II. Key findings of the mission

1. Collaboration among government institutions on environmental data is low. There is a strong need for coordination and collaboration among the institutions responsible for collecting environment statistics. Data reporting, especially on the current data gaps must be prioritized by all institution.
2. There is a vast number of unaccounted environmental resources in Malawi, particularly on forests that are lost through charcoal production and Lake Malawi whose fish stocks of both economic and environmental value are unaccounted for. This requires physical accounts to document the extent of effects on the environment and urgent response curb the environmental degradation.
3. A collaboration between the environmental dimension and other dimensions such as social and economic of the country's development agenda is lacking. There is need to evaluate economic value of environment resources which might be affected in development projects. Impacts of the environment as a result of economic and social growth must be assessed.

## III. Conclusion and Next steps

1. It is essential to have a workshop on the SDMX tool for statistical and IT experts and its development for use in Malawi through National Statistical Offices.
2. Malawi should be able to collect and share data on the environment, the use of remote sensing and the open source data links provided by UN Environment will be a good starting point and advance to ground truthing. A second workshop to Malawi is required to further explore the data collection on environment accounts and the functions of FDES.
3. Malawi will work to improve on the networking and coordination of their data collection and environment accounting. Malawi will call for a series of meetings to focus on the networking. This will be followed by the systems that will allow for Malawi to share data and each of the involved ministry's progress of work on environment statistics.
4. There will be a use of the ESSAT to form a basis of data structure available and missing within the institutions that collects environment statistics. A preliminary assessment will be done by all stakeholders of Malawi and submitted to UN Environment. This will aid in exploring further ways in which Malawi can actively employ environmental statistics in

- National Development. A follow-up workshop will be held in Malawi specifically to discuss the ESSAT and determine how Malawi can move forward based on the results of filing the tool.
5. The Ministry of Natural Resources should use its authority to coordinate all departments, stakeholders and players in natural resources and environment to facilitate developments. Both Ministries of Natural Resources and Environment should work hand-in-hand with the Department of water to harness Lake Malawi's depth, quality of water and measure water being piped out of the lake through irrigation and general uses.
  6. The Malawi National Statistics Office should establish information/data management systems to track and keep records on environment.

## Appendix 1: Shared responsibilities on the ESSAT

Organization	Component	Responsible person
Min of Energy and Mining	Component 1: Environmental Conditions and Quality	Chris Matemba (Meteorological services department)
Water resources	Topic 1.1.2: Hydrographical characteristics	Mr Peaches Phiri
Geological surveys	Topic 1.1.3: Geological and geographical information	Mr Nathan Banda
Land resources	Topic 1.1.4: Soil characteristics	Mr Enock Whayo
Forestry Department	Sub-component 1.2: Land Cover, Ecosystems and Biodiversity	Mr Moses Njiwawo
Forestry Department	Topic 1.2.3: Forests	Mr Moses Njiwawo
Environmental Affairs Department	Sub-component 1.3: Environmental Quality	Mr Borniface Chimwaza
Land resources	Topic 1.3.4: Soil pollution	Mr Enock Whayo
Environmental Affairs Department	Topic 1.3.5: Noise	Mr Borniface Chimwaza
Min of Energy and Mining	Sub-component 2.1: Mineral Resources	Mr Chris Matemba
Min of Energy and Mining/Trade	Topic 2.1.2: Production and trade of minerals	Mr Chris Matemba/Goodwin Nyirongo
Min of Energy and Mining	Sub-component 2.2: Energy Resources	Mr Chris Matemba
Min of Energy and Mining/Min of Trade	Topic 2.2.2: Production, trade and consumption of energy	Mr Chris Matemba/ Goodwin Nyirongo
Land resources/Forestry/irrigation	Topic 2.3.1: Land use	Mr Whayo/ Moses Njiwawo

Forestry department	Topic 2.3.2: Use of forest land	Moses Njiwawo
Land resources	Sub-component 2.4: Soil Resources	Mr Enock Whayo
Forestry department	Sub-component 2.5: Biological Resources	Moses Njiwawo
Min of Agriculture (Fisheries)	Topic 2.5.2: Aquatic resources	Maurice Makuwira
Min of Agriculture (Crops)	Topic 2.5.3: Crops	Boyd Mwafulirwa
Min of Agriculture (Livestock)	Topic 2.5.4: Livestock	Suzgo Chapa
Parks and Wildlife	Topic 2.5.5: Other non-cultivated biological resources	Davis Kalima
Water resources	Sub-component 2.6: Water Resources	Peaches Phiri
Water resources	Topic 2.6.2: Abstraction, use and returns of water	Peaches Phiri
Environmental Department Affairs	Topic 3.1.1: Emissions of greenhouse gases	Borniface Chimwaza
Environmental Department Affairs	Topic 3.1.2: Consumption of ozone depleting substances	Borniface Chimwaza
Environmental Department Affairs	Topic 3.1.3: Emissions of other substances	Borniface Chimwaza
City assembly	Topic 3.2.1: Generation and pollutant content of wastewater	Thokozani Mkaka
City assembly	Topic 3.2.3: Discharge of wastewater to the environment	Thokozani Mkaka
City assembly	Sub-component 3.3: Generation and Management of Waste	Thokozani Mkaka
City assembly	Topic 3.3.2: Management of waste	Thokozani Mkaka

Min of Agriculture (Crops)	Sub-component 3.4: Release of Chemical Substances	Boyd Mwafulirwa
DODMA	Sub-component 4.1: Natural Extreme Events and Disasters	Yona Phiri
DODMA	Topic 4.2.1: Occurrence of technological disasters	Yona Phiri
DODMA	Topic 4.2.2: Impact of technological disasters	Yona Phiri
NSO	Sub-component 5.1: Human Settlements	Sautso Wachepa
NSO	Topic 5.1.2: Access to selected basic services	Sautso Wachepa
City Assembly	Topic 5.1.3: Housing conditions	Cathrene Kulemeka/Gift Kasamila
City Assembly	Topic 5.1.4: Exposure to ambient pollution	Cathrene Kulemeka/Gift Kasamila
City Assembly/Min of transport/Road traffic Directorate	Topic 5.1.5: Environmental concerns specific to urban settlements	Cathrene Kulemeka/Gift Kasamila/Joel Kossam
Min of Health/NSO	Topic 5.2.1: Airborne diseases and conditions	Simeon Yosefe/ Stone Mbiruyawanda
Min of Health/NSO	Topic 5.2.2: Water-related diseases and conditions	Simeon Yosefe/ Stone Mbiruyawanda
Min of Health/NSO	Topic 5.2.3: Vector-borne diseases	Simeon Yosefe/ Stone Mbiruyawanda
Min of Health/NSO	Topic 5.2.4: Health problems associated with excessive UV radiation exposure	Simeon Yosefe/ Stone Mbiruyawanda
EAD	Sub-component 6.1: Environmental protection and resource management expenditure	Borniface Chimwaza

EAD	Sub-component 6.2: Environmental Governance and Regulation (6.2.1 – 6.2.3)	Borniface Chimwaza
DODMA	Topic 6.3.1: Preparedness for natural extreme events and disasters	Yona Phiri
DODMA	Topic 6.3.2: Preparedness for technological disasters	Yona Phiri
EAD	Topic 6.4.1: Environmental Information	Borniface Chimwaza
EAD	Topic 5.2.5: Toxic substance- and nuclear radiation-related diseases and conditions	Borniface Chimwaza
EAD	Topic 6.4.2: Environmental Education	Borniface Chimwaza
EAD	Topic 6.4.3: Environmental Perception and Awareness	Borniface Chimwaza
EAD	Topic 6.4.4: Environmental engagement	Borniface Chimwaza

## Appendix 2: PARTICIPANTS DETAILS

<b><u>PARTICIPANTS DETAILS</u></b>				
<b>No</b>	<b>Name</b>	<b>Ministry/Department</b>	<b>Office Location</b>	<b>Email</b>
1	Mercy Kanyuka	NSO	Zomba	<a href="mailto:mkanyuka@gmail.com">mkanyuka@gmail.com</a>
2	Tiope Mleme	NSO	Zomba	<a href="mailto:tmleme@yahoo.co.uk">tmleme@yahoo.co.uk</a>
3	Sautso Wachepa	NSO	Zomba	<a href="mailto:sauwachepa@gmail.com">sauwachepa@gmail.com</a>
4	Alick Mphonda	NSO	Zomba	<a href="mailto:mphonda@yahoo.com">mphonda@yahoo.com</a>
5	Jameson Ndawala	NSO	Zomba	<a href="mailto:jndawala@gmail.com">jndawala@gmail.com</a>
7	Nathan Banda	Geological survey	Zomba	<a href="mailto:nathanbanda99@gmail.com">nathanbanda99@gmail.com</a>
8	Enock Whayo	Min of Agriculture (Land resources)	Lilongwe	<a href="mailto:ewhayo@yahoo.co.uk">ewhayo@yahoo.co.uk</a>
9	Boyd Mwafulirwa	Min of Agriculture (Crops)	Lilongwe	<a href="mailto:boydmwafulirwa@gmail.com">boydmwafulirwa@gmail.com</a>
10	Moffat Manase	Min of Agriculture (Fisheries)	Lilongwe	<a href="mailto:moffatmanase@gmail.com">moffatmanase@gmail.com</a>
12	Borniface Chimwaza	Environmental Affairs Department (Environmental health)	Lilongwe	<a href="mailto:bchimwaza@yahoo.com">bchimwaza@yahoo.com</a>
16	Kalikene Mwambelo	Marines	Lilongwe	<a href="mailto:kmwambelo@yahoo.com">kmwambelo@yahoo.com</a>
17	Chris Matemba	Ministry of mines & Energy	Lilongwe	<a href="mailto:matembachris78@gmail.com">matembachris78@gmail.com</a>
18	Moses Njiwawo	Department of Forestry	Lilongwe	<a href="mailto:mnjiwawo@yahoo.com">mnjiwawo@yahoo.com</a>
19	Godwin Nyirongo	Ministry of Trade	Lilongwe	<a href="mailto:gnyirongo5@gmail.com">gnyirongo5@gmail.com</a>
20	Davis Kalima	Parks and Wildlife	Lilongwe	<a href="mailto:daviskalima@yahoo.co.uk">daviskalima@yahoo.co.uk</a>
	Gift Kasamila		Lilongwe	<a href="mailto:gkasamila@gmail.com">gkasamila@gmail.com</a>

21		City Assembly/Lands (Urban planning)		
22	Thokozani Mkaka	City Assembly (Waste management)	Lilongwe	<a href="mailto:thokomkaka@gmail.com">thokomkaka@gmail.com</a>
23	Yona Phiri	Department of Disaster and Risk Management	Lilongwe	<a href="mailto:yonaphiri17@gmail.com">yonaphiri17@gmail.com</a>
24	Joel Kossam	Ministry of Transport	Lilongwe	<a href="mailto:jkossam@gmail.com">jkossam@gmail.com</a>
25	Jayne Phiri	Ministry of Finance Economic and Planning	Lilongwe	<a href="mailto:phirijaynie@gmail.com">phirijaynie@gmail.com</a>
26	yared Bekele	UNECA	UNECA	<a href="mailto:bekele3@un.org">bekele3@un.org</a>
27	Jillian Campbell	UNEP	UNEP	<a href="mailto:campbell7@un.org">campbell7@un.org</a>
28	Dany Ghafari	UNEP	UNEP	<a href="mailto:dany.ghafari@un.org">dany.ghafari@un.org</a>
29	Diana Ngina	UNEP	UNEP	<a href="mailto:diana.ngina@un.org">diana.ngina@un.org</a>
30	Amdeberhan Getachew	UNECA	UNECA	<a href="mailto:getachewa.uneca@un.org">getachewa.uneca@un.org</a>
31	Sine Tepe	UNECA	UNECA	<a href="mailto:tepe@un.org">tepe@un.org</a>
32	Hanna Chabwera	NSO Reional Office Centre	Lilongwe	<a href="mailto:chabwerahu@yahoo.com">chabwerahu@yahoo.com</a>
33	Cathrene Kulemeka	Lilongwe City Council	Lilongwe	<a href="mailto:cathrenekulemeka@gmail.com">cathrenekulemeka@gmail.com</a>

### Appendix 3: AGENDA

Time	Activities	Responsible
<b>Monday 17 December 2018</b>		
08H30 – 09H00	Registration of the participants	Sautso Wachepa, NSO
09H00 – 09H02	Director of Ceremony welcomes Guest of Honor and participants; opening prayer	Borniface Chimwaza/Gift Kasamila
09H00 – 09H10	Welcome remarks from UNECA	UNECA
	Welcome remarks from UN Environment	UN Environment
09H10 – 09H20	Keynote Address by Guest of Honor, Commissioner of Statistics	Commissioner of Statistics, Mrs Mercy Kanyuka
09H20 – 09H30	Introduction of the participants	All participants, Borniface Chimwaza ,EAD
09H30 – 09H45	Presentation and adoption of the agenda	Borniface Chimwaza, EAD
09H45 – 10H00	<b>Coffee break</b>	
10H00 – 11H30	An overview presentation of physical accounts of Water, Land and Forests accounts	UN Environment
11H30 – 12H00	Exchanges on the development of the physical accounts of water resources (state of progress, difficulties encountered, prospects)	Chris Matemba, Min of Energy and Mining, Malawi
12H00 – 13H30	Presentation of the physical account of water (including practical exercise)	UN Environment
13H30-15H00	<b>Coffee break</b>	
15H00 – 16H00	Exchanges on the elaboration of the physical accounts of land (state of progress, difficulties encountered, prospects)	Chris Matemba, Min of Energy and Mining, Malawi
16H00 – 17H30	Statistical Data and Metadata eXchange (SDMX) standard overview	UNECA/UN Environment
<b>Tuesday 18 December 2018</b>		
09H00-09H30	Summary of day 1	Kalikene Mwambelo
09H30-11H00	Presentation of the physical account of land (including practical exercise)	UN Environment
11H00-11H20	<b>Coffee Break</b>	

<b>Time</b>	<b>Activities</b>	<b>Responsible</b>
<b>11H20-12H20</b>	Exchanges on the development of physical accounts of forests and wood resources (progress, difficulties encountered, prospects)	Chris Matemba, Min of Energy and Mining, Malawi
<b>13H20-14H30</b>	<b>Lunch break</b>	
<b>14H30-16H00</b>	Exchanges on the first part of the self-assessment tool for environment statistics: case of Malawi	Sautso Wachepa, NSO, Malawi
<b>16H00-17H00</b>	SDMX information model	UN Environment/UNECA
<b>Wednesday 19 December 2018</b>		
<b>09H00-09H30</b>	Summary of day 2	Kalikene Mwambelo
<b>09H30-10H30</b>	SDMX in Statistical Information	UNECA/UN Environment
<b>10H30-11H00</b>	<b>Coffee break</b>	
<b>11H00-11H30</b>	Exchanges of the second part of the self-assessment tool for environment statistics: case of Malawi	Alick Mphonda, NSO, Malawi
<b>11H20-12H30</b>	SDG Data Structure Definition	UNECA/UN Environment
<b>12H:00-13H00</b>	SDMX Tools Architecture	UNECA/UN Environment
<b>13H00-13H05</b>	<b>Summary and conclusion</b>	UNECA/UN Environment
<b>13H05- 13H10</b>	<b>Closing remarks</b>	Deputy Commissioner of Statistics, Jameson Ndawala